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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,087	07/12/2001	Butrus T. Khuri-Yakub	A-69570/AJT	3514

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EXAMINER	
DICKENS, CHARLENE	

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/905,087

Applicant(s)

KHURI-YAKUB ET AL.

Examiner

Ex. Dickens

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 9-14, 17, 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 15, 16, 18-23, 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. Applicant's election without traverse of species six in Paper No. 12 is acknowledged. Claims 9-14, 17, 24 and 25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made without traverse in Paper No. 12.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 5/3, 6, 16, 18-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Scholler et al. Scholler et al. teaches:

Claim 1: A fluidic device comprising: at least one microchannel 101, and at least one capacitive micromachined ultrasonic transducer 200 integrated into one wall of said microchannel;

Claim 3, 5/3: a base 500, at least one capacitive ultrasonic transducer 200 integrated in said base, and a top having a microgroove 310 sealed to said base with the microgroove over the ultrasonic transducer whereby to form a microchannel with an ultrasonic transducer in one wall of said channel (Fig. 2);

Claims 6, 19: at least two spaced transducers (col. 2, line 62) and said top has its microgroove oriented over both of said transducers;

Claim 16: at least one microchannel 310 having opposed walls, at least one capacitive micromachined ultrasonic transducer 200 integrated into one wall, and a flexible membrane on the opposite wall opposite the ultrasonic transducer whereby ultrasonic waves from the ultrasonic transducer are reflected back to the transducer by the flexible membrane (col. 5, lines 54-64);

Claim 18: a silicon base 500, one capacitive micromachined ultrasonic transducer 200 integrated into said base, and a top 100 having a microgroove 101 sealed to said base with the microgroove over said capacitive micromachined ultrasonic transducer;

Claims 20, 21: a processor 600 for operating said transducers in a pulse echo mode and for operating said transducers to receive ultrasonic pulses from one another.

Claim 22: said microgroove includes a compliant membrane opposite said ultrasonic transducer (Fig. 2).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the

prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 4, 5/4, 7, 8, & 15 are rejected under 35 U.S.C.

103(a) as being unpatentable over Scholler et al. Claims 2 & 4 differ with the recitations of a fluidic device in which the microchannel has dimensions in the range 1  $\mu\text{m}$  to 500  $\mu\text{m}$ . The dimensions serve the purpose of optimizes the functions of the transducer. Scholler et al. does not provide any dimensions. However, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experiment. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136. In the instant case Scholler et al. discloses the identical claimed apparatus and would thus experience optimization of the functions of the transducer. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have performed routine experimentation to arrive with the microchannel has dimensions in the range 1  $\mu\text{m}$  to 500  $\mu\text{m}$  in Scholler et al. for the purpose of optimizing the functions of the transducer.

Claim 5/4: the modified Scholler et al. discloses capacitive micromachined ultrasonic transducer 200.

Claim 7: the modified Scholler et al. discloses the base 500 is semiconductor material and the ultrasonic transducer is micromachined in said material (Fig. 2).

Claim 15: the modified Scholler et al. discloses in which the base 500 is silicon or a dielectric material (col. 5, lines 59-62).

Claim 8: the modified Scholler et al. discloses said microgroove includes a compliant membrane (Fig. 2) which is disposed opposite said ultrasonic transducer 200.

6. Claims 23 and 26/5/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scholler et al. in view of Hawkins.

Claims 23 & 26 differ from Scholler et al. with a fluidic device in which a transducer is operated to mix fluids. Hawkins discloses with a fluidic device in which a transducer (40, 42) is operated to mix fluids (col. 4, lines 40-52 & col. 4, lines 66, 66 - col. 5. lines 1-5) in a channel 30 for the of purpose having the capability of mixing two of more fluid components in a controlled manner (col. 2, lines 21, 22). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a fluidic device in which a transducer is operated to mix fluids in Scholler et al. as taught by Hawkins for the purpose of having the capability of mixing two of more fluid components in a controlled manner (col. 2, lines 21, 22).

7. Claims 26/5/4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Scholler et al., as applied to claims 5/4, in further view of Hawkins. Claim 26/5/4 differs from the modified Scholler et al. with a fluidic device in which a transducer is operated to mix fluids. Hawkins discloses with a fluidic device in which a transducer (40, 42) is operated to mix fluids (col. 4, lines 40-52 & col. 4, lines 66 - col. 5. lines 1-5) in a channel 30 for the of purpose having the capability of mixing two of more fluid components in a controlled manner (col. 2, lines 21, 22). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a fluidic device in which a transducer is operated to mix fluids in the modified Scholler et al. as taught by Hawkins for the purpose of having the capability of mixing two of more fluid components in a controlled manner (col. 2, lines 21, 22).

8. Applicants' arguments filed 8/11/03 have been fully considered but they are not persuasive. Applicants argue Scholler et al. does not teach or suggest an ultrasonic transducer, nor does it teach an ultrasonic transducer integrated into a wall of a channel. The Examiner disagrees with these arguments. First of all, Scholler et al. makes use of an ultrasonic, i.e., acoustic, transducer. Next, integrated is defined as, by Webster's II New Riverside University Dictionary, as "To make into whole by bringing all parts together: UNIFY."

and Scholler et al. clearly illustrates a recording device made whole by bringing all parts, including transducer 200, together: UNIFY (Fig. 2). Hence, the two aforementioned arguments are not persuasive. Applicants go on to argue element 310, in Scholler et al., does not define a channel but rather defines an open space. Webster's II New Riverside University Dictionary defines channel as "a course through which something may be directed or moved.". Element 310 is described as an air gap (col. 4, line 63). A gap is defined as, an opening", by Webster's II New Riverside University Dictionary. Therefore, since air is a substance that can have a course through which the air may be directed or move and since a gap is an opening, in the broadest reasonable interpretation, element 310 defines a channel. This argument too is not deemed convincing. Applicants additionally imply Scholler et al. do not have longitudinally spaced transducers. This argument is not persuasive either because Scholler et al. clearly states (col. 2, line 62) a plurality of transducer; and the Figs. illustrate how one transducer is longitudinal, thus, inherently, two transducers would also be longitudinally. Next, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., transducers disposed along a channel) are not recited in the rejected claim(s). Although the claims are




interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The applicants continue their arguments, stating there is no suggestion of a flexible membrane opposite the electret. The Examiner disagrees with this argument. Electrodes are flexible membranes and the electrodes are opposite to the electret. As for the argument Scholler et al. does not teach or suggest integrating the capacitive micromachined transducer into the base. As stated earlier, Scholler et al. clearly teaches integration as defined by Webster's New Riverside II University Dictionary. Thus, this argument is not convincing. Next, applicants state Scholler et al. does not have any suggestion of using or operating transducers in a pulse echo mode. Scholler et al. discloses a voltage pulse generation means 600. A skilled artisan would find a pulse generation means is inherently capable of operating transducers in a pulse echo mode. Hence, this argument is deemed not to be persuasive. Applicants claim a compliant membrane. Applicants go on to argue they are unable to find such a teaching in Scholler et al. Applicants attention are drawn to Fig.2, col. 5, lines 34-53, wherein Scholler et al. describes fluid supply means and fluid holding means made from thermosetting plastics or other materials. This disclosure makes it inherent the fluid

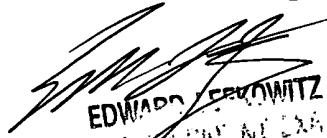
supply means and fluid holding means can be complaint membranes. Accordingly, Scholler et al. clearly teaches and suggests the applicants' claimed invention. All purported arguments are again found not to be persuasive.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Dickens or the supervisor, Edward Lefkowitz, whose telephone numbers are (703) 305-7047 or 305-4816, respectively.

  
cd/dickens  
November 12, 2003

  
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